

ART. IV.—*Rupture of the Right Rectus Abdominis Muscle from Muscular Efforts—Operation and Recovery, with Remarks.* By SAMUEL B. RICHARDSON, M. D., of Louisville, Ky.

BEFORE breakfast, and shortly after a healthy evacuation from the bowels, on Friday morning, February 29, 1856, Mr. B——, a healthy athletic young man, aged 28 years, in a half playful mood, hopped over a narrow ditch. Immediately after this effort, he was seized with acute, persistent pain about two inches below and to the right of the umbilicus. Simultaneous with, or rather just preceding the access of pain, he heard a distinct sound or *snap*, like the crack of a whip. Nausea, with a constant desire to evacuate the bowels, supervened and persisted.

Dr. John N. Lewis, of St. Matthew's Post Office, six miles east of Louisville, and about one mile distant from the residence of the patient, was called to see him soon after the accident. Finding him as described, he administered an enema *without* effect, and then ordered a dose of magnesia sulphas.

Saturday, March 1. Dr. L. found his patient with an aggravation of the symptoms existing the day before—without an action from the bowels—the saline solution, and everything else taken into the stomach, had been thrown up as soon as swallowed. Under this state of the case I was requested to join Dr. L. in conference at an early hour, which I did at 12 o'clock M. The condition of the patient was as above described, in addition to which there existed a flat intumescence or tumour in the region of pain, discovered by Dr. L. at his first visit, but now much augmented in size and extent, with very marked rigidity and increased sensibility all over the abdomen. It was agreed to apply twelve leeches over the tumour, followed by ice cap, after the bleeding ceased, and to administer chloroform by inhalation, *pro re nata*.

2d. Met Dr. L. again, at an early hour; patient's condition more aggravated than before; has *not* slept, he says, since the accident; vomiting very frequent since midnight, with constant nausea; leech-bites continue to bleed, manifestly reducing the force of the heart's action; there is a feeling of prostration, with headaché; tenesmus persists.

After arresting the hemorrhage from the leech-bites by cauterization, it was agreed not to delay an operation, expecting, as most likely from the signs and symptoms present, that we should find a strangulated ventral hernia. I asked the question, before operating, if muscular and tendinous lesion might not be the condition? The answer to which was a decided negative by Dr. L. and Dr. John Hardin, the latter of whom I met on my way out of the city, and invited him to be present at the anticipated operation.

After confession and the eucharist (a papal priest having entered the room shortly after our arrival), I proceeded to operate—the formulary of which was not very dissimilar to that for incarcerated umbilical hernia.

After dividing, by a crucial incision made over the most prominent portion of the tumour, and extending somewhat beyond its limits, the integuments, subcutaneous cellular tissue, fat, and superficial abdominal fascia, a number of small coagula of extravasated blood were brought into view about the size of grains of corn; the tumour now became more apparent and tense. Expecting rather to find a hernial sac beneath, the *fascia profunda abdominis* was elevated slightly with a tenaculum and opened by horizontal movements of the knife, and such was its tensity that it almost split in advance of the scalpel as this was carried along the groove of the director.

This section completed, brought into view a large coagulum of dark, black blood. This, upon its removal, was found to occupy an irregular cavity very like that of a diffused false aneurism. It was supposed, by estimate, to weigh about one-half of a pound, resting and pressing posteriorly and deeply upon the peritoneum and bowels.

The peritoneum was found uninjured, advancing forward or rising as the bloody mass was removed. Upon clearing the exposed cavity of its bloody contents, the extraordinary nature of the injury was clearly revealed. The right rectus abdominis muscle entire, with the corresponding epigastric artery and its accompanying vessels and nerves, as well as the sheath of the rectus muscle, were torn completely across, and their ends retracted and separated one and a half to two inches. The precise point of rupture was a central one between the right linea alba and linea semilunaris, and the linea transversa which intersects the umbilicus, and the linea transversa next below it.

One artery only was tortioned—none ligatured. The anæsthesia developed by chloroform and continued during the operation, which lasted from fifteen to twenty minutes, was very perfect and satisfactory—the patient sleeping, happily, and almost unconscious of what was done, and in due time emerging from its effects without any manifest over-congestion or injurious effects upon the nervous centres. Warm-water dressing was applied, and directed to be continued to the wound, with morphia internally, and repeated if required.

Tuesday, 4th. Another conference requested; patient not regarded as in a satisfactory condition. After meeting, removed the dressings and found another coagulum occupying the cavity of the wound, resting, as the first, upon the peritoneum; not so large as the first; some fluid blood discharging from the wound. He slept some during the past forty-eight hours, under the influence of morphia, which has been administered at intervals since operation. No action of the bowels for four days (or since accident); tongue furred; pulse 82, and slightly tense; abdominal tenderness diminished; bladder evacuated spontaneously; no appetite; thirst continuing, but no vomiting since afternoon of the day of operation; some nausea; tenesmus not so great, though yet present. We agreed to give five grains of calomel, to be followed in six hours with Seidlitz powders; and, after the action of the bowels to resume the morphia.

25th. Patient has been doing well; he walked about his room the third week after the operation, and came to the city; has taken occasional saline aperients, and a few doses of morphia at bedtime; appetite good. The wound, upon examination, is found to be closed through most of its extent, mainly by granulation; depressed granulous surface in the centre of the wound; no hemorrhage from the wound since the 4th inst. A depression will most probably always exist at the seat of injury.

Remarks.—I have not met with a similar case to the above in my practice or reading, and I have consulted *all* the English and French surgical literature on the subject, contained in my moderately full private library. In tome 20, *Dictionnaire de Méd.* (30 vol. edition), pp. 360–62, I find reference to such an accident, but no detailed case.

The article in the dictionary referred to, is by Olivier, and as it contains the *only statistics* of muscular lesions within my knowledge, I will here translate and append it to this article for the convenience of those who may not have access to the original.¹ *Diagnostically* and *pathologically*, as

¹ “*Rupture of Muscles.*—Well established examples of this accident are not found recorded prior to the conclusion of the last century. It is to the labours of Roussille-Chamseru, and of M. Sédillot (*Mém. et Prix. de la Soc. de Méd. de Paris*, 1817) that we are indebted for the knowledge possessed on the subject at the present time. Many authorities have supposed that *tendons alone* were susceptible of being broken, and Bichat, in his *General Anatomy* (tom. viii. page 153, Paris, 1801), endeavours to explain this phenomenon by supposing that, when a rupture occurs, the fleshy fibres are in a state of contraction, whilst those of the tendons are passive, the former thereby possessing greater density than the latter are least likely to yield. M. Sédillot has proven the unsoundness of this theory of the great anatomist, by collecting a number of well established cases, in which the solution of continuity was confined to the *fleshy fibres alone*. ‘These lesions,’ he says, ‘are always due to a sudden and unexpected effort, which puts into forcible contraction certain muscles, or portions of muscles, whilst the remainder of the organ and its connections are in a state of relaxation. The fibres thus contracted not having the power to resist successfully their antagonists, or against the resistance placed at their extremities, and ceasing to exert any power, experience a forced elongation, resulting in their rupture.’ (*Mém. Cité.*) Whatever value may be attached to this explanation, compared with the one referred to before—in summing up the twenty-eight observations embraced in his work—M. Sédillot states that in *twenty-one* cases, where the seat of the lesion is indicated, *thirteen* of them took place at the point of insertion of the *fleshy fibres into their tendons*, and in *eight* the lesion was found to have occurred in the *body* of the muscle itself. Boyer and other authors have reported analogous facts.

“This accident occurs, as we have already stated, with much less frequency where great and sustained efforts are made, than in *automatic, sudden and unexpected* movements; for instance, to prevent a fall, avoid a shock, &c. &c.

“The muscles most exposed, or liable to rupture, are those of the *calf of the leg*, the *straight anterior muscle of the thigh*, the *rectus abdominis*, the *psaos*, and the *deltoid*, &c.

“The sudden and involuntary contraction which occasions the rupture is ordinarily interrupted by an instantaneous sharp pain, which indicates the precise moment of the

well as the operative procedure employed, this case furnishes much of interest and of *practical* importance. By its teachings, it is evident that this accident might be *confounded* with other grave pathological states—as hernia, intussusception, lesions of some of the abdominal contents, &c. &c. *Without* an operation, we may conclude that an *abscess* would have formed in the site of the muscular rupture (*irritation* not destroying life too soon, as it threatened to do), and pointing and opening internally, thereby developing *fatal* peritonitis.

The entire subject of the *union of divided muscles*, whether from trauma or by muscular action, the nature of the process set up by the vital organism

laceration, and arrests the movements of the part involved. If let alone, the pain persists ordinarily a considerable time—sometimes for a week, but with diminishing intensity. This accident is very often accompanied by a *peculiar noise*, occasioned by the rupture of the muscular fibres—compared to the snap of a whip. When a considerable number of the fleshy bundles have been torn, or where a muscle has been ruptured transversely through its entire thickness, there exists at the seat of injury a *depression* proportioned to its breadth and depth, which depression is increased or diminished as the injured organ is put into a state of extension or relaxation. This condition is sometimes observed at the moment of injury—sometimes afterward—the effusion of blood which results from the tearing of vessels, determines an ecchymosis and *swelling* sufficient to *mask* the depression, but the signs of sanguineous effusion rarely occur before the lapse of twenty-four to forty-eight hours after the injury, and do not cease before the termination of the first week.

“Recovery rarely occurs short of many months, when muscular rupture is abandoned, or receives no treatment. And here, as in external wounds, cicatrization is effected by interposed cellular tissue, assuming a fibrous aspect. These injuries do not give rise to serious results unless the lesion is extensive, or some deep muscle of the trunk is involved. In reference to prognosis, the case of a young man is reported, who ruptured the psoas in raising a tub. High inflammatory action supervened, terminating in abscess, &c. &c., and finally death. (Sédillot, *Mém. Cit.*, et Boyer, *Traité de Chir.*, t. xi. p. 89.) This observation being very incomplete in regard to the pathological anatomy, it is impossible to know whether the numerous phenomena observed were the consequence of rupture of the psoas alone.

“The means adapted to favour union of ruptured muscles are, position, repose, bandage, and others to meet the symptoms. The ruptured muscle should be placed in a state of relaxation by positions of the limb: if the lesion is considerable, involves a voluminous muscle, or many muscles, or *deeply* situated ones, as the psoas muscle; or, finally, if the subject is very irritable, the member should be kept in almost absolute immobility during eight or ten days. Compressive bandages are the most appropriate means for maintaining quietude, applied as methodically as the nature of the injury will permit. The experience of M. Sédillot, according to his reported cases, proves the superiority of this ‘*appareil*,’ and it is not easily understood why other authors on this subject have not insisted more upon its adoption. Compression favours relaxation of the muscle, approximates the ends of the divided organ as far as it is desirable, resists new contractions, and finally facilitates the absorption of the effusion and resolution of the engorgement. Should the engorgement be very great, with the supervention of febrile or inflammatory reaction, general and local bloodletting, fomentations, poultices, &c., should be resorted to.”

to accomplish it, as well as the nature of the new bond of union, &c. &c., are all brought under consideration in the study of this case. For an observation on this subject, with remarks furnished by myself, in which I had an opportunity of examining the structure uniting a divided muscle of considerable magnitude, the interested reader is referred to the *Transylvania Journal of Medicine*, 1837-38. In conclusion, it may be inferred that *hernial protrusion might* occur through the cicatrix of a united rectus-abdominis muscle.

LOUISVILLE, Sept. 4, 1856.

ART. V.—*Case of Double Fœtus.* By CHARLES D. MEIGS, M. D., Professor of Midwifery in Jefferson Medical College, Philadelphia. (With a plate.)

In the number of this Journal for July, 1855, I gave some account of a specimen of hepatodym children presented to me by Dr. G. W. Boerstler, of Lancaster, Ohio. The account was illustrated by two lithographs from Root's daguerreotypes.

The present case is illustrated by a drawing on stone, by Mr. Daniels, a clever artist, now much occupied in this city.

I am indebted for the fine specimen to the great liberality of Dr. S. M. Ross, of Darlington, to whom my sincere thanks are due for so great a kindness.

The figure, Pl. II., exhibits a faithful representation of the double fœtus, seen in front.

The genital organs are female.

The right eye of the right and the left eye of the left fœtus are perfect; while the right eye of the left and the left eye of the right fœtus are fused together into one single eyeball, covered by a compound palpebra with three canthi; the fused inner canthus being in the middle of the lower eyelid. All traces of the outer canthi of this compound eye are lost.

In the fusion of the heads, the left and right ears of the right and left fœtuses are lost, with the exception of the small tubercle seen in the middle of the faces. The left fœtus has a double hare-lip, and the right one a common hare-lip. The calvaria are deficient in both the children, so that they are anencephalous. There was also failure of development of the spinous processes and bridges of the cervical and dorsal vertebræ, giving rise to spina bifida of both the dorsal and cervical ranges, while the lower lumbar and sacral vertebræ are perfectly well developed.

This circumstance is interesting, showing, as it does, that the simplicity apparent in the two well-formed arms and legs, and the single trunk, is nevertheless a real duality of individuals. The dark dermoid excrescence that covers the top of the head is too imperfect to contain any hair-follicles; so